

# Mixing Sustainable Development and Brownfields Redevelopment

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**LEED Rating Systems**  
**Brownfields Fit**

U.S. GREEN BUILDING COUNCIL

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## **An Introduction to the** **U.S. Green Building Council** **and the** **LEED Green Building** **Rating System®**



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# USGBC's MISSION:

*to promote the design and construction of buildings that are environmentally responsible, profitable, and healthy places to live and work.*

The organization's activities...

- *Integrate* building industry sectors
- *Lead* market transformation
- *Educate* owners and practitioners

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# USGBC is...

- A national nonprofit organization
- A diverse membership of organizations
- Consensus-driven
- Committee-based product development
- Developer and administrator of the LEED® Green Building Rating System

U.S. GREEN BUILDING COUNCIL

# LEED as “Green” Design

- Design and construction practices that significantly reduce or eliminate the negative impact of buildings on the environment and occupants in five broad areas:
- **Sustainable site planning**
- **Safeguarding water and water efficiency**
- **Energy efficiency and renewable energy**
- **Conservation of materials and resources**
- **Indoor environmental quality**

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## Benefits of “Green” Building

### Environmental benefits

- **Reduce the impacts of natural resource consumption**

### Economic benefits

- **Improve the bottom line**

### Health and safety benefits

- **Enhance occupant comfort and health**

### Community benefits

- **Minimize strain on local infrastructures and improve quality of life**

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# Environmental Benefits

- Reduce Commercial and Residential Impact
  - 65.2% of total U.S. electricity consumption <sup>1</sup>
  - > 36% of total U.S. primary energy use <sup>2</sup>
  - 30% of total U.S. greenhouse gas emissions <sup>3</sup>
  - 136 million tons of construction and demolition waste in the U.S. (approx. 2.8 lbs/person/day) <sup>4</sup>
  - 12% of potable water in the U.S. <sup>5</sup>
  - 40% (3 billion tons annually) of raw materials use globally <sup>6</sup>

# Economic Benefits

## Competitive first costs

- **Integrated design allows high benefit at low cost by achieving synergies between disciplines and between technologies**

## Reduce operating costs

- **Lower utility costs significantly**

## Optimize life-cycle economic performance

# Economic Benefits

## Increase building valuation and ROI

- **Using the income-capitalization method: asset value = net operating income (NOI) divided by the capitalization rate (return). If the cap rate is 7%, divide the reduction in annual operating costs by 7% to calculate the increase in the building's asset value**
- **Quantify financial benefit in terms of Return On Investment (ROI) instead of payback time.**

## Decrease vacancy, improve retention

- **Marketing advantages**

## Reduce liability

- **Improve risk management**

# Productivity Benefits

## Improve occupant performance

- **Estimated \$29 –168 billion in national productivity losses per year <sup>1</sup>**
- **Student performance is better in daylight schools. <sup>2, 3</sup>**

## Reduce absenteeism and turnover

- **Providing a healthy workplace improves employee satisfaction**

## Increase retail sales with daylighting

- **Studies have shown ~40% improvement <sup>4</sup>**



## Leadership in Energy & Environmental Design®

A leading-edge system for designing, constructing, operating and certifying the world's greenest buildings.



## Why Was LEED® Created?

- Facilitate positive results for the environment, occupant health and financial return
- Define “green” by providing a standard for measurement
- Prevent “greenwashing” (false or exaggerated claims)
- Promote whole-building, integrated design processes

# Why Was LEED® Created?

- Use as a design guideline
- Recognize leaders
- Stimulate green competition
- Establish market value with recognizable national “brand”
- Raise consumer awareness
- Transform the marketplace!

# LEED® Certification Process

A three step process:

- Step 1: Project Registration
  - LEED Letter Templates, CIR access, and on-line project listing
- Step 2: Technical Support
  - Reference Package
  - Credit Inquiries and Rulings (CIR)
- Step 3: Building Certification
  - Upon documentation submittal and USGBC review

# LEED® Certification Benefits

## Recognition of Quality Buildings and Environmental Stewardship

- Third party validation of achievement
- Qualify for growing array of state and local government incentives
- Contribute to growing knowledge base
- LEED certification plaque to mount on building
- Official certificate
- Receive marketing exposure through USGBC Web site, case studies, media announcements

# LEED® Products

LEED covers many types of buildings and construction under the following LEED products:

**LEED-NC:** New Construction, Renovations/Additions

(for commercial and institutional buildings, released in 2000)

**LEED-EB:** Existing Buildings

(public release: Winter 2004)

**LEED-CI:** Commercial Interiors

(public release: Winter 2004)

**LEED-CS:** Core and Shell

(public release: 2005)

**LEED-H:** Homes

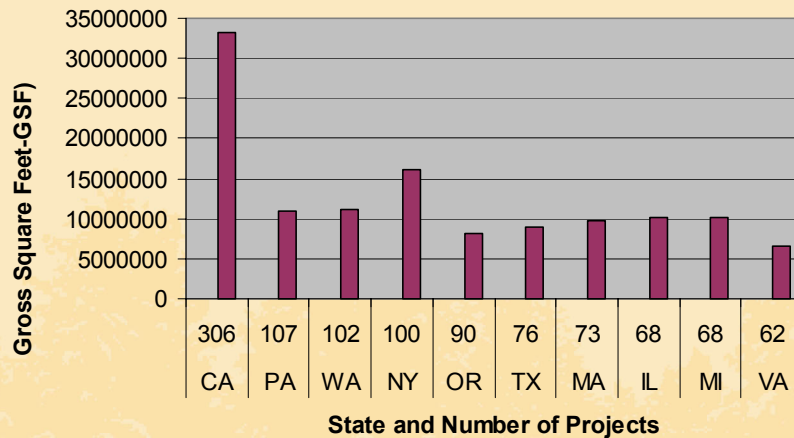
(public release: 2006)

**LEED-ND:** Neighborhood Development

(public release: 2008)

# LEED-NC® Market Transformation

## Registered Projects by State - Top 10

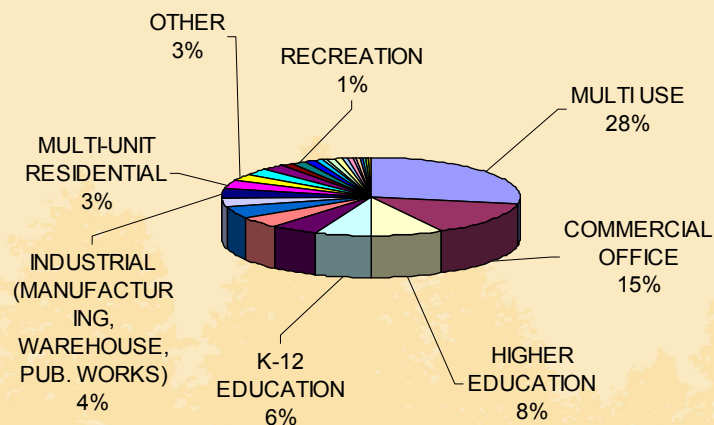


As of 05.02.05

All statistics exclude pilot projects

# LEED-NC® Market Transformation

## Registered Projects by Building Type

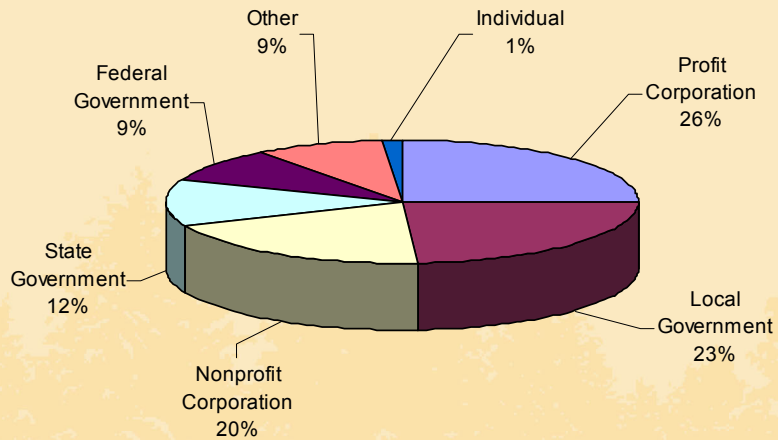


As of 05.02.05

All statistics exclude pilot projects

## LEED-NC® Market Transformation

### Registered Projects by Owner Type



As of 05.02.05

All statistics exclude pilot projects

## LEED-NC® in the USA

### Federal Government Use:

- General Services Administration (GSA)
- U.S. Air Force
- U.S. Army Corps of Engineers
- Department of State
- Department of Energy (DOE)
- Environmental Protection Agency (EPA)
- U.S. Navy

# LEED-NC® in the USA

## State Government Use\*:

- California
- Maryland
- Massachusetts
- New Jersey
- New York
- Oregon
- Pennsylvania
- Washington

## Local Government Use\*:

- Austin, TX
- Arlington, VA
- Boulder, CO
- Chicago and Cook County, IL
- Los Angeles, CA
- Portland, OR
- San Jose, CA
- San Francisco, CA
- Seattle, WA

\*Not limited to these examples

# LEED-NC® around the World

- Australia
- Canada\*\*
- China\*
- France
- India

- Japan\*
- Spain\*
- Mexico\*\*
- Italy\*
- Côte d'Ivoire\*
- Guatemala\*

\*Certified Projects

\*\*Registered Projects

- Whole-building approach encourages and guides a collaborative, integrated design and construction process
- Evaluates and recognizes performance in accepted green design categories
- LEED product development includes existing buildings, commercial interiors, multiple buildings, core & shell, homes and neighborhood design
- Four levels of certification

- Categories
- Pre requisites  
(Y Switches)
- Points  
(Y/N Switches)

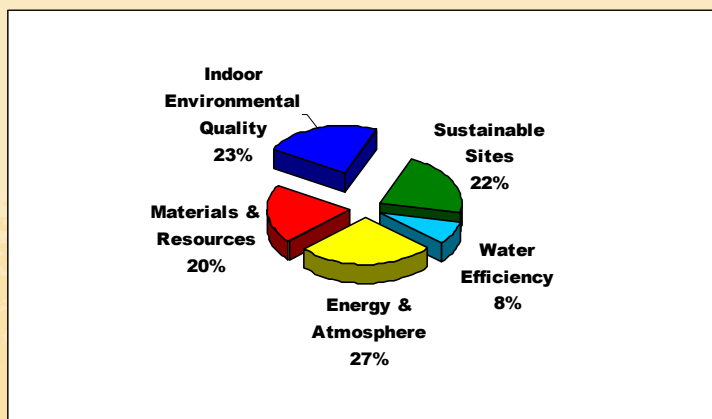
**LEED®** LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN

# LEED-NC® Certification

- **Certified** 26-32 points (38% of total points)
- **Silver** 33-38 points (48% of total points)
- **Gold** 39-51 points (57% of total points)
- **Platinum** 51-69 points (74% of total points)

# LEED-NC® Point Distribution

Five LEED credit categories



## LEED-CS® Certification

- **Certified** 24-29 points (38% of total points)
- **Silver** 30-35 points (47% of total points)
- **Gold** 36-47 points (56% of total points)
- **Platinum** 48-64 points (75% of total points)

## LEED-CS® Certification

- **What is LEED for Core & Shell?**
  - LEED-CS is for designers, builders, developers and new building owners who address sustainable design for new core and shell construction.
  - Core and shell construction covers base building elements, such as the structure, envelope and building level systems, such as central HVAC, etc.
  - The CS product recognizes that the division between owner and tenant responsibility for certain elements of the building varies between markets.

# LEED-CS® Certification

- **How will LEED-CS be used?**

- LEED-CS will be used to evaluate building projects where the owner does not control the interior design and fit out.
- It is not available for use as an option for those owners who wish to achieve exemplary performance in the core and shell while failing to meet LEED standards in the building interiors fit out.
- Those owners who have control over both the core and shell and interiors elements should apply under LEED-NC.

# LEED-CS® Certification

- **How is the LEED-CS Rating System developed?**

- The LEED-CS Rating System is currently being pilot tested by over 100 project teams.
- USGBC is currently accepting LEED-CS pilot applications to join the high profile list of buildings currently participating in the pilot.
- Pilot projects are provided access to draft credit language, pilot specific credit interpretations and are the first group asked to provide feedback on rating system evolution.
- By implementing LEED-CS, pilot projects are able to provide constructive criticism and feedback on credit achievement thresholds, specific market sector nuances and documentation.

# LEED-CS® Certification

- **Why is LEED-CS being developed?**

- USGBC has to date concentrated development of LEED on new construction of whole buildings, operations and maintenance of existing buildings and fit out of commercial interiors.
- The LEED-CS market is the mirror image of that served by the LEED-CI (LEED for Commercial Interiors) Rating System.
- As with the LEED-CI rating system, LEED-CS aims to evaluate design and construction projects only by the performance of those aspects of the project that the owner controls.

# LEED-CS® Certification

- **How is LEED-CS different from the other LEED rating systems?**

- USGBC understands that the criteria and desired timing of certification for the potential LEED-CS applicant may be significantly different than that for the typical LEED applicant.
- Because most of the buildings that will qualify for consideration under LEED-CS will be designed and sometimes built speculatively, without a specific tenant commitment, LEED-CS allows for “pre-certification” prior to the building’s construction.
- Pre-certification enables core and shell developers to distinguish their projects in the marketplace by virtue of their LEED initiatives.

# LEED-ND® Certification

- **Tell me more about pre-certification.**
  - Pre-certification is essentially a statement from the developer saying,  
*“I intend to complete the building with these features and at this level of performance”*
  - and a parallel statement from the USGBC saying,  
*“If you construct the building that you have proposed and document the measures taken, you will be granted a LEED-CS certification at this level.”*

# LEED-ND® Certification

- **How does USGBC ensure quality following pre-certification?**
  - USGBC maintains the rigor of the LEED Rating System by thoroughly reviewing the LEED-CS documentation upon completion of construction.
  - If the building satisfies the LEED-CS criteria, USGBC awards certification of the building as a LEED-CS Rated building.

# LEED-ND® Certification

- **How can my project be part of the LEEDCS pilot?**
  - To submit a project for pilot consideration, please complete the LEED-CS Expression of Interest Form and email a detailed project description to:  
[cs@committees.usgbc.org](mailto:cs@committees.usgbc.org)

# LEED-ND® Certification

- Anticipated Certification Levels \*
  - Certified 46 – 56 points (40% of total points)
  - Silver 57 – 67 points (50% of total points)
  - Gold 68 – 90 points (60% of total points)
  - Platinum 91 – 114 points (80% of total points)

\* Percentages taken from the "LEED Product Development and Maintenance Manual"

# LEED-ND® Certification

- **What is LEED® for Neighborhood Developments?**

- The LEED for Neighborhood Developments (LEED-ND) Rating System, currently under development, will integrate the principles of smart growth, urbanism, and green building into the first national standard for neighborhood design.
- LEED-ND is being developed by USGBC in partnership with the Congress for New Urbanism (CNU) and the Natural Resources Defense Council (NRDC).

# LEED-ND® Certification

- **What is the significance of LEED-ND certification?**

- LEED-ND certification will recognize development projects that successfully protect and enhance the overall health, natural environment, and quality of life of our communities.
- LEED-ND will deliver more efficient energy and water use – especially important in urban areas where infrastructure is often overtaxed.
- LEED-ND will also focus on smart growth and new urbanist best practices, including designing neighborhoods that reduce vehicle miles traveled and building communities where jobs and services are accessible by foot or public transit.

# LEED-ND® Certification

- **What is the current status of LEED-ND?**

- The LEED-ND Core Committee completed its first preliminary draft in September 2005, and held a 45-day comment period on that draft between September 13 and October 27, 2005.
- The comment period was primarily held to solicit comments from members of the LEED-ND Corresponding Committee, but others interested in commenting on the draft were welcomed to do so too.
- The LEED-ND Core Committee is now reviewing the comments submitted and will post a document summarizing their responses in early 2006.

# LEED-ND® Certification

- **How will LEED-ND be different from the Application Guide for Campus and Multiple Buildings Projects?**

- LEED-ND will focus on residential and commercial developments developed by a single entity but likely sold or leased to multiple consumers.
- The Application Guide for Campus and Multiple Building Projects will target institutional and office park campuses, usually owned and operated by a single entity.
- It is an application guide for LEED-NC and, therefore, will not incorporate smart growth to any greater extent than LEED-NC does.

# LEED-ND® Certification

- **What's next?**

- The comments made during the recent comment period will aid the LEED-ND Core Committee in revising the preliminary draft and producing a draft which will be used as the LEED-ND Pilot Rating System.
- The pilot draft will then be tested with a limited number of projects through a LEED-ND pilot program.
- The LEED-ND Core Committee will use the information learned during the pilot program to produce a revised draft of the LEED-ND Rating System, which will then be posted for public comment before it is submitted for the final ballot vote.

# LEED-ND® Certification

- **What are the Core Committee and the Corresponding Committee?**

- The LEED-ND Core Committee does the day-to-day work of developing the rating system.
- The LEED-ND Corresponding Committee is invited to comment on draft versions of the LEED-ND rating system and will have the first opportunity to respond to the call for pilot LEED-ND projects.
- In addition, LEED-ND Corresponding committee members receive minutes from LEED-ND Core Committee meetings and notification of LEED-ND events.

# LEED-ND® Certification

- **I would like to stay involved with LEED-ND developments. How can I join the Corresponding Committee?**
  - The LEED-ND Corresponding Committee is open to USGBC members and nonmembers alike, but there are different ways to join:
    - USGBC members should go to [www.usgbc.org](http://www.usgbc.org), log into Your Account, and subscribe to the LEED-ND committee listserv.
    - If you are not a USGBC member, send an e-mail to [nd@committees.usgbc.org](mailto:nd@committees.usgbc.org) stating that you'd like to join the LEED-ND Corresponding Committee.

# LEED-ND® Certification

- **What is the timeline for developing LEED-ND?**
  - May 2004: LEED-ND development began.
  - Fall 2006: LEED-ND Pilot Program launches.
  - 2007: LEED-ND Public Comment periods begin.
  - 2008: LEED-ND v2.0 Ballot and Launch.

# LEED-NC® Certification

## **Sustainable Sites Credit 3**

### **1 Point**

#### **Brownfield Redevelopment**

##### **Intent**

Rehabilitate damaged sites where development is complicated by real or perceived environmental contamination, reducing pressure on undeveloped land.

##### **Requirements**

Develop on a site documented as contaminated (by means of an ASTM E1903-97 Phase II Environmental Site Assessment) OR on a site classified as a brownfield by a local, state or federal government agency. Effectively remediate site contamination.

## **Potential Technologies & Strategies**

During the site selection process, give preference to brownfield sites. Identify tax incentives and property cost savings. Develop and implement a site remediation plan using strategies such as pump-and-treat, bioreactors, land farming and in-situ remediation.

##### **Submittals**

- Provide a copy of the pertinent sections of the ASTM E1903-97 Phase II Environmental Site Assessment documenting the site contamination OR provide a letter from a local, state or federal regulatory agency confirming that the site is classified as a brownfield by that agency.
- Provide the LEED Letter Template, signed by the civil engineer or responsible party, declaring the type of damage that existed on the site and describing the remediation performed.

# LEED-CS® Certification

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# LEED-ND® Certification

DRAFT ONLY 9/6/05

## LOCATION EFFICIENCY

**Credit:** (4 Points)

### Contaminated Brownfields Redevelopment

#### Intent

Conserve land and reduce air, water, and land pollution from contaminated land.

#### Requirements

Locate project on a site, part or all of which is documented as contaminated, AND

Remediate site contamination such that the controlling public authority approves the protective measures and/or clean-up as effective, safe, and appropriate for the future use of the site.

## Submittals

Provide the following:

- 1) The LEED Letter template, signed by the civil engineer or responsible party, declaring the type of contamination that existed on the site and describing the remediation performed; and
- 2) Copies of the brownfields surveys/assessment/sampling results. Such documentation should include one or more ASTM E1527 "Phase I" reports, ASTM E1903-97 "Phase II" reports, State Response Program submittals/reports, reports adhering to EPA final standards and practices on all appropriate inquiries or others; and
- 3) A letter from the controlling public authority stating that the protective measures and/or clean-up constituted remediation that is effective, safe, and appropriate for the future use of the site.

#### Notes

The EPA definition of a brownfield site is "real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant."  
This credit was adapted from LEED-NC 2.1.

# LEED-ND® Certification

DRAFT ONLY 9/6/05

## LOCATION EFFICIENCY

**Credit:** (1 Point)

### High Cost

### Contaminated Brownfields Redevelopment

#### Intent

Encourage the cleanup of more complicated or challenging contaminated brownfields sites.

#### Requirements

Earn the Contaminated Brownfields Redevelopment credit,

AND

Perform cleanup such that the costs of cleanup are in excess of \$1 million (USD).

## Submittals

Provide the following:

- (1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met and
- (2) documentation demonstrating the cost of cleanup in excess of \$1 million (USD).

#### Notes

Not all of the \$1 million cleanup costs need be incurred directly by the developer; if a redevelopment authority or private-public partnership is bearing some of the financial burden, such a project would still be able to earn this credit, since the purpose is to give extra incentive to redevelop these sites.

# LEED-ND<sup>®</sup> Certification

*DRAFT ONLY 9/6/05*

## **LOCATION EFFICIENCY**

**Credit:** (1 Point)

### **Contaminant Reduction in Brownfields Remediation**

#### **Intent**

Encourage brownfields cleanup methods that reduce contaminant volume or toxicity and thereby minimize long-term remediation or monitoring burdens.

#### **Requirements**

Earn the Contaminated Brownfields Redevelopment credit,

AND

Use cleanup method(s) that treat, reduce or eliminate the volume or toxicity of contaminated material found on the site.

#### *Notes & Questions*

Cleanup methods which include only capping or translocation of contaminated material to an off-site location will not achieve this credit.

See USEPA's Hazardous Waste Cleanup Information webpage for information on innovative treatment and site characterization technologies: <http://www.cbc-in.org>. Innovative technology goes above and beyond containment, capping, pump and treat, incineration, and off-site disposal.

## **Submittals**

Provide the following:

- 1) The LEED Letter template, signed by the responsible party, declaring that the requirements have been met; and
- 2) a narrative or site/technical drawings demonstrating the cleanup methods used.

## Resources

- LEED Green Building Rating System
- Training Workshop
- Reference Package
- Professional Accreditation
- Welcome Packet
- Credit Rulings
- Website ([www.leedbuilding.org](http://www.leedbuilding.org))
- Email ([leedinfo@usgbc.org](mailto:leedinfo@usgbc.org))